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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,353	04/15/2005	Sheau-Hwa Ma	FA1131USPCT	6242
7590 Sudhir G Deshmukh E I du Pont de Nemours & Company Legal Patents Wilmington, DE 19898			EXAMINER TSOY, ELENA	
			ART UNIT 1792	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/531,353	<b>Applicant(s)</b> MA ET AL.	
	<b>Examiner</b> Elena Tsoy	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 2-8 and 10-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-8 and 10-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. <u>10/10/2007</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____   |

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 30, 2007 has been entered.

***Response to Amendment***

Amendment filed on October 30, 2007 has been entered. Claims 1 and 9 have been cancelled. Claims 2-8, and 10-24 are pending in the application.

***Claim Objections***

1. Objection to claims 9-11 under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim has been withdrawn due to amendment.
2. Claim 22 is objected to because of the following informalities: Claim 22, line 11, "styrene wherein" should be changed to "styrene, wherein" for clearer understanding.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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4. Rejection of claims 1-24 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement has been withdrawn.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Rejection of claims 2-8, and 10-24 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been withdrawn.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-8, and 10-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swarup et al (US 5506325) in view of Barsotti (US 4411951).

Swarup et al disclose a process for producing a multi-coat system on a substrate (See column 6, lines 17-21) comprising applying a base coat of a colored film-forming composition (See column 9, lines 48-53) to a substrate, driving solvent, i.e., organic solvent or water, out of the base coat film by heating for a short period of time or by an air drying period (claimed flashing) (See column 9, lines 57-60), applying a clear top coat composition to the base coat by e.g. spray applications via a **wet-on-wet** technique before the base coat has been cured (See column 10, lines 6-10), then heating two coatings to conjointly cure both coating layers (See

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column 10, lines 12-15). Either or both of the colored and clear film-forming compositions (See column 2, lines 27-29) contains 1-22.5 wt %, preferably 3-5 wt % (See column 5, lines 34-38) of a copolymer of their invention made from a monomer mixture containing *oligomeric* monomer (See column 2, lines 1-18), And up to 2.5 wt % of silica (See column 2, lines 19-23). The colored base coat film-forming composition can be *any* of the compositions useful in coatings applications, particularly *automotive* applications (See column 6, lines 22-24) such as those comprising acrylic polymers as a resinous binder and a pigment to act as the colorant (See column 6, lines 24-27).

The Examiner Note: a base coat coating composition of Swarup et al comprising the copolymer of their invention made from a monomer mixture containing *oligomeric* monomer and *any* of the compositions useful in coatings applications, particularly *automotive* applications such as those comprising acrylic polymers read on **claimed crosslinkable component**.

Swarup et al further teach that the acrylic polymers are copolymers of one or more alkyl esters of acrylic acid or methacrylic acid (**claimed alkyl methacrylate**) (See column 6, lines 22-32) optionally together with one or more other polymerizable ethylenically unsaturated monomers such as styrene (See column 6, lines 36-38). These polymers may be either of the thermoplastic type or the thermosetting *crosslinking* type (See column 6, lines 31-32). Where the polymer is of the *crosslinking* type, suitable functional monomers may be used in addition to the other acrylic monomers mentioned above and include, for example, methacrylic acid (claimed carboxylic acid group containing monomer), and hydroxyethyl methacrylate, hydroxypropyl methacrylate (**claimed functional methacrylate monomer**). The coating composition (**claimed pot-mix**) in such cases contains a *crosslinking agent* such as an aminoplast (See column 6, lines

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48-50), or other crosslinking agents such as *polyisocyanates* including *blocked polyisocyanates* (See column 6, lines 50-51).

Swarup et al do not expressly teach that the base coat composition may also be formed by combining a crosslinking agent such as aminoplast or polyisocyanate with a crosslinkable component shortly before application. However, it is well known in the art that **blocked** polyisocyanate is used when a binder is capable of reacting with polyisocyanate curing agent before application to a substrate. Obviously, instead of using a blocked polyisocyanate, polyisocyanate may be combined with a binder shortly before application forming a pot-mix, as required by step a) of Claim 22.

Swarup et al fail to teach that the acrylic polymers have molecular weight of 15,000-100,000 (Claims 7 and 23-24), polydispersity of 1.05-10.0 (Claim 7) and Tg from -5°C to +100°C (Claim 8) and are made of a monomer mixture consisting essentially of 2-12 wt % of carboxylic acid group containing monomer such as methacrylic acid, alkyl methacrylate, functional methacrylate monomer and styrene (Claim 22).

Barsotti teaches that a coating composition comprising 30-60% by weight of a non-aqueous liquid carrier and about 40-70% by weight of a binder, the binder being preferably an acrylic polymer (See column 3, lines 11-16) having a GPC weight average molecular weight ranging within 500-30,000 (See column 4, lines 13-14, 27-29), which **overlaps** claimed range of 15,000-100,000 (**note that overlapping ranges are considered to be obvious**) (See column 3, lines 11-15) and a glass transition temperature of about -20°C to +25°C, which **overlaps** claimed range of from -5°C to +100°C (note that overlapping ranges are considered to be obvious) (See column 4, lines 15-16), and a melamine crosslinking agent (See column 3, lines 15-16) is

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suitable for forming a color coat finish for substrates (See column 7, lines 44-45) such as automobile finishes (See column 7, lines 37-40). Typically useful acrylic polymers that can be used in the composition are formed from an alkyl methacrylate, alkyl acrylate, hydroxy alkyl acrylate, hydroxy alkyl methacrylate and can contain styrene, acrylic acid or methacrylic acid (See column 3, lines 29-36). To form an acrylic polymer which has a hydroxyl content of about 2-10% by weight, a sufficient amount of the aforementioned hydroxy alkyl acrylate or methacrylate is utilized (See column 3, lines 42-45). The polymer also can contain small amounts of ethylenically unsaturated carboxylic acid, such as acrylic acid, methacrylic acid, itaconic acid, in amounts of about 0.1-5% by weight, which *overlaps* claimed range of 2-12 wt % (note that overlapping ranges are considered to be obvious) (See column 3, lines 45-48). The Examiner takes official notice that it is a common knowledge in the art acrylic monomers and methacrylic monomers are used either interchangeably or both. Note that Barsotti and Swarup et al also use either of them or both. Moreover, it is well settled that a prior art compound may suggest its homologs because homologs often have similar properties (See MPEP 2144.08, II, 4c). Note that methacrylic acid is a homolog of acrylic acid. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used methacrylic acid and its derivatives instead of acrylic acid and its derivatives for making acrylic copolymer because it is well known in the art that they have similar properties.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used acrylic polymers containing coating composition of Barsotti in Swarup et al since Swarup et al teach that *any* of the compositions useful in coatings *automotive* such as

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those comprising acrylic polymers, and Barsotti teaches that his coating composition is suitable for forming a color coat finish for substrates such as automobile finishes.

The Examiner takes official notice that the composition would form a strike-in resistant layer because it is formed by a process and a composition substantially identical to those of claimed invention.

As to claim 2, Swarup et al teach that suitable drying conditions will depend on the particular base coat composition, and on the ambient humidity with certain waterbased compositions, but in general a drying time of from about 1 to 5 minutes at a temperature of about 80<sup>0</sup>-250<sup>0</sup>F (20<sup>0</sup>-121<sup>0</sup>C) will be adequate to ensure that mixing of the two coats is minimized, but at the same time, the base coat film is adequately wetted by the topcoat composition so that satisfactory intercoat adhesion is obtained (claimed flashing) (See column 9, lines 60-68). Also, more than one base coat and multiple top coats may be applied to develop the optimum appearance. Usually between coats, the previously applied coat is **flashed**; that is, exposed to ambient conditions for about 1 to 20 minutes. See column 10, lines 1-5. Obviously, time and temperature in drying process are effective variables.

It is held that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant time and temperature parameters (including those of claimed invention) in Swarup et al depending on particular coating composition through routine experimentation in the absence of showing of criticality.



As to claims 5-6, it is well known in the automotive coating art that a metal substrate is first coated with E-coat followed by a primer before applying a base coat.

As to claim 7, the acid functional acrylic copolymer has a GPC weight average molecular weight ranging within 500-30,000, which **overlaps** claimed range of 15,000-100,000. It is well settled that overlapping ranges are *prima facie* evidence of obviousness. It would have been obvious to one having ordinary skill in the art to have selected the portion of Barsotti's range that corresponds to the claimed range. *In re Malagari*, 184 USPQ 549 (CCPA 1974). The Examiner takes official notice that polydispersity of the acid functional acrylic copolymer prepared either by a process of Barsotti or by a process of Swarup et al is within claimed range of from 1.05 to 10.0 because the process Swarup et al (See column 5, lines 1-15) or the process of Barsotti (See column 4, lines 8-16, 30-66) is substantially identical to that of claimed invention (See specification, page 6, lines 32-37).

As to claims 10-11, Barsotti teaches that useful acrylic polymers contain about 15-82% by weight of an alkyl methacrylate, 2-50 % by weight of an alkyl acrylate and 16-35% by weight of a hydroxyl alkyl acrylate or a **hydroxyl alkyl methacrylate**, which **overlaps** claimed range of 5-40 wt % (note that overlapping ranges are considered to be obvious) and up to 30% by weight of styrene and 0.1-5 % by weight of acrylic acid (See column 5, lines 47-64).

As to claims 13-14, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant concentration parameters of (including those of claimed invention) in the cited prior art depending on particular coating composition through routine experimentation in the absence of showing of criticality.

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As to claims 15-16, Swarup et al teach that the clear coating composition may be formed as one-package composition (See column 8, lines 52-55) or multi-package composition in which a polyacid curing agent (See column 8, lines 66-67) is combined shortly before application (See column 9, lines 1-3).

As to claim 17, Swarup et al teach that the coating composition comprises pigment (See column 7, lines 47-67).

As to claims 18-19, since Swarup et al do not limit to particular *automotive* applications, it would have be obvious to one of ordinary skill in the art at to use in OEM composition or refinish composition.

As to claim 20, Swarup et al teach that the coating composition may be used on an automobile body (See column 1, lines 36-37).

As to claim 21, Swarup et al teach that the coating compositions are preferably liquid high solids coating compositions, that is, compositions containing greater than 40 percent, preferably greater than 50 percent by weight resin solids (See column 5, lines 43-46), and are *aqueous* based compositions (See column 5, lines 27-33).

9. Claims 2-8, and 10-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barsotti in view of Swarup et al

Barsotti discloses a process for producing a clear coat/color coat finish for substrates (See column 7, lines 44-45) such as automobile finishes (See column 7, lines 37-40) comprising applying a color coat to a primer (See column 9, lines 52-53), applying a clear coat to the color coat while the color coat is still wet (See column 8, lines 60-63) and baking the coatings (See column 7, lines 25-27). The clear coat is a transparent coating composition and the color coat is

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of the *same* coating composition but containing pigments in a pigment (See column 7, lines 47-52). To insure that there will be no popping or cratering of the finish is to allow the solvents to flash off for about 15-30 seconds before a second coating is sprayed on or otherwise applied, then waiting from about 2-10 minutes before baking the coating to allow any residual solvents to flash off (See column 7, lines 27-34).

As was discussed above, the color coat of Barsotti is substantially identical to that of claimed invention.

Barsotti fails to teach that the coating composition may be formed by combining a melamine crosslinking agent with a crosslinkable component shortly before application.

However, Swarup et al teach that crosslinkable compositions may be formulated as one-pack (See column 8, lines 52-55) or multi-pack compositions depending upon the reactivity of the individual components (See column 8, lines 66-67; column 9, lines 1-4). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to formulate a coating composition of Barsotti as a two-pack composition depending on reactivity of components.

As to limitations of dependent claims, see above.

As to claim 21, Barsotti fails to teach that the coating composition is based on water.

However, it is well known in the art that environmentally benign aqueous coating compositions are more desirable. Swarup et al teach that a binder may be used in an organic based composition or acid groups of a binder may be *neutralized* with amines to render the binder dispersible in water to be used in aqueous based compositions (See column 5, lines 23-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have *neutralized* acid groups of a binder of Barsotti to render the binder dispersible in water to be used in aqueous based compositions, as taught by Swarup et al.

10. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swarup et al in view of Barsotti /Barsotti in view of Swarup et al/, further in view of Hazan et al (US 5,244,696) for the reasons of record set forth in paragraph 9 of the Office Action mailed on 12/01/2006.

#### ***Response to Arguments***

11. Applicant's arguments with respect to claims 2-8, 10-24 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Thursday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy, Ph.D.  
Primary Examiner  
Art Unit 1792

ELENA TSOY  
PRIMARY EXAMINER

A handwritten signature in black ink, appearing to read 'ETsoy', is written over the printed name and title.

November 16, 2007